



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,175	04/01/2004	Hung-Wen Su	0941-0940PUS1	7374
2292 7590 12/12/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER WILKINS III, HARRY D	
			ART UNIT 1795	PAPER NUMBER
			NOTIFICATION DATE 12/12/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/814,175

Applicant(s)

SU ET AL.

Examiner

Harry D. Wilkins, III

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 9-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group I (claims 1-8) in the reply filed on 26 October 2007 is acknowledged. The traversal is on the ground(s) that there is no undue burden on the examiner to search all of the claims in a single application. This is not found persuasive because, as previously noted, the different inventions have acquired a different status in the art as shown by their different classification.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 and 3-7 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Mathieu (US 6,042,712).

Mathieu anticipates the invention as claimed. Mathieu teaches (see figure 4) an electroplating cell including an electroplating tank for containing an electrolyte at a first

temperature, a substrate holder for holding a semiconductor substrate and a heater for heating a portion of the electrolyte adjacent to the substrate holder to a second temperature higher than the first temperature.

Regarding claim 3, since the composition of the heating medium flowing through the bladders (118) relates to the manner in which the claimed structure was utilized, any limitations relating to the composition of the heating medium have not been given patentable weight. See MPEP 2114 and 2115. The bladders of Mathieu would have been capable of utilizing thermal oil.

Regarding claims 4-5, the heating device of Mathieu would have been capable of maintaining the claimed temperature differences.

Regarding claim 6, since the composition of the electrolyte relates to the manner in which the claimed structure was utilized, any limitations relating to the composition of the electrolyte have not been given patentable weight. See MPEP 2114 and 2115. The electroplating cell of Mathieu would have been capable of electroplating copper from a solution containing copper ions.

Regarding claim 7, the heater of Mathieu was embedded in the substrate holder to generate heat and conduct heat to the substrate and the adjacent electrolyte.

4. Claims 1, 2 and 4-7 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Reynolds (US 6,221,437).

Reynolds anticipates the invention as claimed. Reynolds teaches (see figures 1 and 2) an electroplating cell including an electroplating tank for containing an electrolyte at a first temperature, a substrate holder for holding a semiconductor substrate and a

heater for heating a portion of the electrolyte adjacent to the substrate holder to a second temperature higher than the first temperature.

Regarding claim 2, the heating device of Reynolds was an electric resistive heating coil.

Regarding claims 4-5, the heating device of Reynolds would have been capable of maintaining the claimed temperature differences.

Regarding claim 6, since the composition of the electrolyte relates to the manner in which the claimed structure was utilized, any limitations relating to the composition of the electrolyte have not been given patentable weight. See MPEP 2114 and 2115. The electroplating cell of Reynolds would have been capable of electroplating copper from a solution containing copper ions.

Regarding claim 7, the heater of Reynolds was embedded in the substrate holder to generate heat and conduct heat to the substrate and the adjacent electrolyte.

5. Claims 1, 4-6 and 8 are rejected under 35 U.S.C. 102(a) or (e)(2) as being clearly anticipated by Oberlitner et al (US 6,547,937).

Oberlitner et al anticipate the invention as claimed. Oberlitner et al teach (see figures 28 and 29 and col. 19, lines 10-17) an electroplating cell including an electroplating tank for containing an electrolyte at a first temperature, a substrate holder for holding a semiconductor substrate and a heater (paddle 132) for heating a portion of the electrolyte adjacent to the substrate holder to a second temperature higher than the first temperature.

Regarding claims 4-5, the heating device of Oberlitner et al would have been capable of maintaining the claimed temperature differences.

Regarding claim 6, since the composition of the electrolyte relates to the manner in which the claimed structure was utilized, any limitations relating to the composition of the electrolyte have not been given patentable weight. See MPEP 2114 and 2115. The electroplating cell of Oberlitner et al would have been capable of electroplating copper from a solution containing copper ions.

Regarding claim 8, the heater of Oberlitner et al was independently arranged inside the electroplating tank and in a position opposite of the substrate holder.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/814,175
Art Unit: 1795

Page 6

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Harry D Wilkins, III
Primary Examiner
Art Unit 1795

hdw